

Description

A Safe cleaner and sterilizer powerful, biodegradable, water based degreaser and oil dispersant. GREEN UP GN is a powerful non chlorinated cleaner for the cleaning of metallic surfaces special for fuel & gases pipes, tanks and peripherals equipment. Does not damage rubber, plastic, metal or stainless steel surfaces GREEN UP GN is a water based degreaser and oil dispersant, which has proved to be a versatile cleaning agent in factory and workshop situations where degreasing cleaning or where a fast drying solvent cleaner is required. GREEN UP GN is made from renewable raw materials –glucose derived from corn, and fatty alcohols from coconut and palm kernel oils due to its natural chemistry, mixt with natural silicates. This product is very mild, low in toxicity and readily Biodegradable This product considerably raises the minimum ignition energy and the temperature flash point of the explosive gas and also diminishes the strong odor of the gas. Following the completion of the neutralizing process the sludge cleaning can be commenced safely. References: 1) IEC 60079-2011: Explosive Atmospheres: General requirements (Also Israel Institute Standard 60079- 2011) 2)NFPA 497-2004: Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas 3) Atex 137: Explosive Atmospheres.

Applications

- General cleaning
- Oil rig and Gas rig cleaning and gases neutralization.
- Refinery cleaning applications and gases neutralization.
- Fuels storage tanks cleaning and gases neutralization
- Sewers and sewage pipes cleaning and gases neutralization.
- Oilrig cleaning.
- Final stage for cleanup of oil pollution and oil spills.
- Printing Industry cleaning.

Summary of Benefits

Biodegradable food save product.

Cleaner and sterilizer combined Water based degreaser.

Can be diluted with water Can be applied in wet areas Free from Chlorinated Solvents

Not harm the not Environment and not flammable

Does not discharge toxic gas or synthetic solvent smell

Does not risk the breathing way

Does not attacking the surface, not damage plastic, rubber and metals.

Not harm the environment and not danger for the users.

It does not cause corrosion of the building structure or the equipment

Direction for Use

GREEN UP GN can be diluted with water before application. the dilution rate would need to be established by trial and error, as all machines are different. The dilution should be performed with clean water only.

GREEN UP GN can also be used for fogging systems. It is necessary to get guidance before operating the fogging system from company representative. The dilution for fogging system using recommended at 3-35% OF GREEN UP GN in water. Occasional fogging is done by a fogging system that is introduced to the clean the defined area with gas emission.

Each treatment depends on the size of the area. Appropriate work clothes, protective glasses and face masks are advised for working in gas area

Physical Properties

Color: Pale Colored Odor

Barely perceptible odor

pH 7-8

Density - 1.06

Flash Point - None

Flammable Boiling Temperature/ range - >100 C Solubility in water – Immiscible

Precautions

This product is for external use only. Not to be swallowed. If swallowed, drink a large amount of water or milk and seek medical attention. Avoid contact with eyes. In case of eye contact rinse with large amounts of water. Keep this cleaning product away from children. Keep the container closed and do not expose to extreme temperatures.

Pack Sizes 4lt, 18lt , 205lt barrels, 1000 litter canister

Shelf Life 3 Years from date of manufacture

THE TEST

THE HEBREW UNIVERSITY OF JERUSALEM
הפקולטה למדעי החקלאות, המזון ואיכות הסביבה
Faculty of Agricultural, Food and Environmental Quality Sciences



The GC-FID-MS analysis of volatile organic compounds (VOCs) in the headspace of oil (2022-11)

GC-FID-MS analysis

The analysis was carried out using a gas chromatograph equipped with the FID and coupled to the mass selective detector (Agilent GC 7890A and 5975C MSD). Chromatographic separations were carried out using BPX-VOL capillary column (60m×0.25mm, 1.4 μm, SGE). Helium was used as the carrier gas. Mass spectra were acquired in the positive EI scan mode (m/z 20-350). Compounds were identified using the NIST 05 library.

Description of the experiment

Oil was poured in a container which was then closed with a lid equipped with foam sprayer. The container was left for approximately one hour for achieving equilibrium and the saturation of VOCs in the headspace of the container.

The headspace was sampled through a small hole in a container using a gas-tight syringe (10 μl). The gaseous sample was analyzed by the GC-FID-MS. Three measurements were carried out to see that responses of detected VOCs are stable and the equilibrium was achieved. The name of these measurements is "Control".

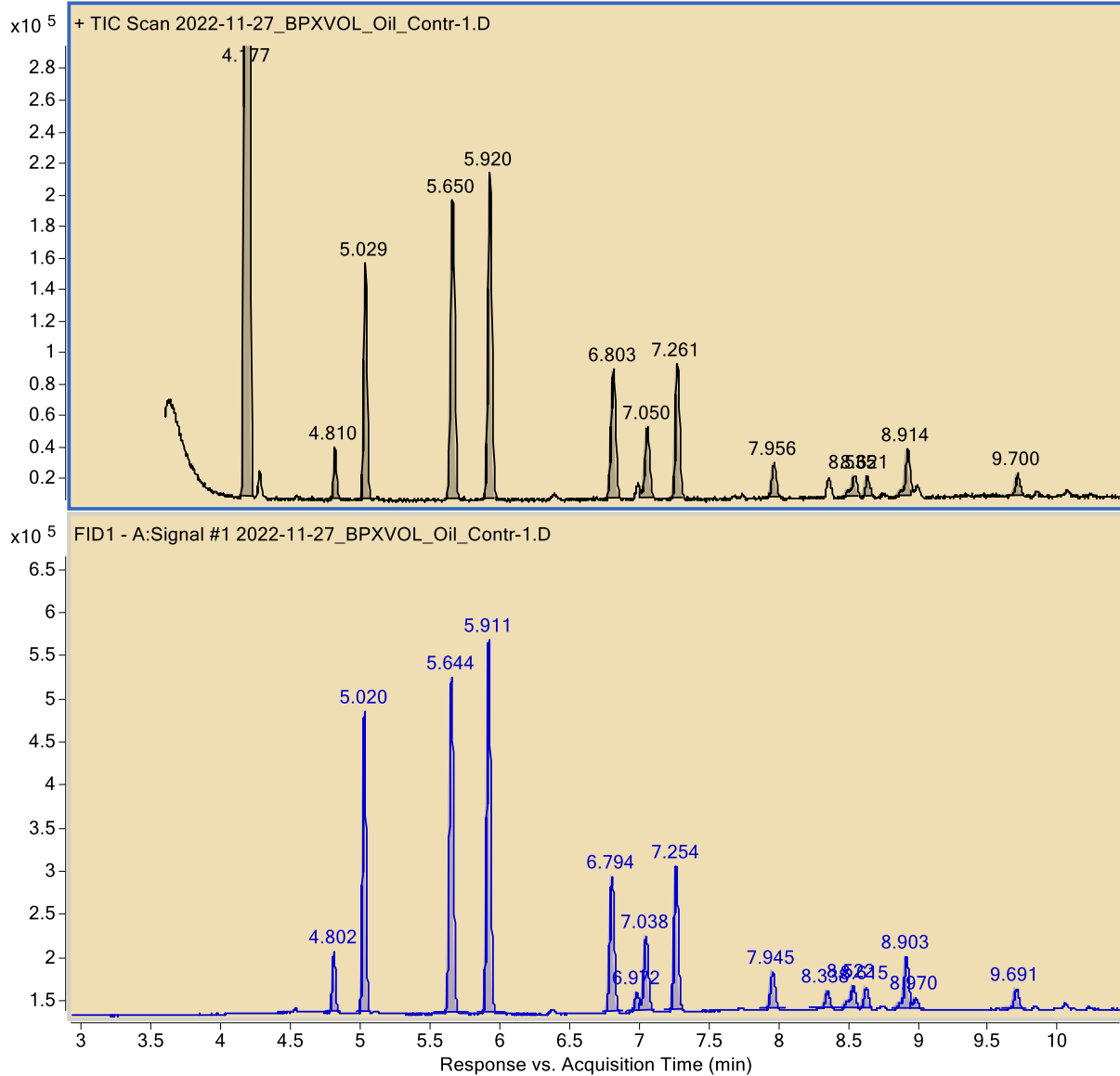
Experiments with foam/fog

The foam ("the formulation") was sprayed into the container for several minutes and then three headspace samples were taken immediately with three clean gas-tight syringes. This experiment was repeated twice.

Experiment date 2022-11-27

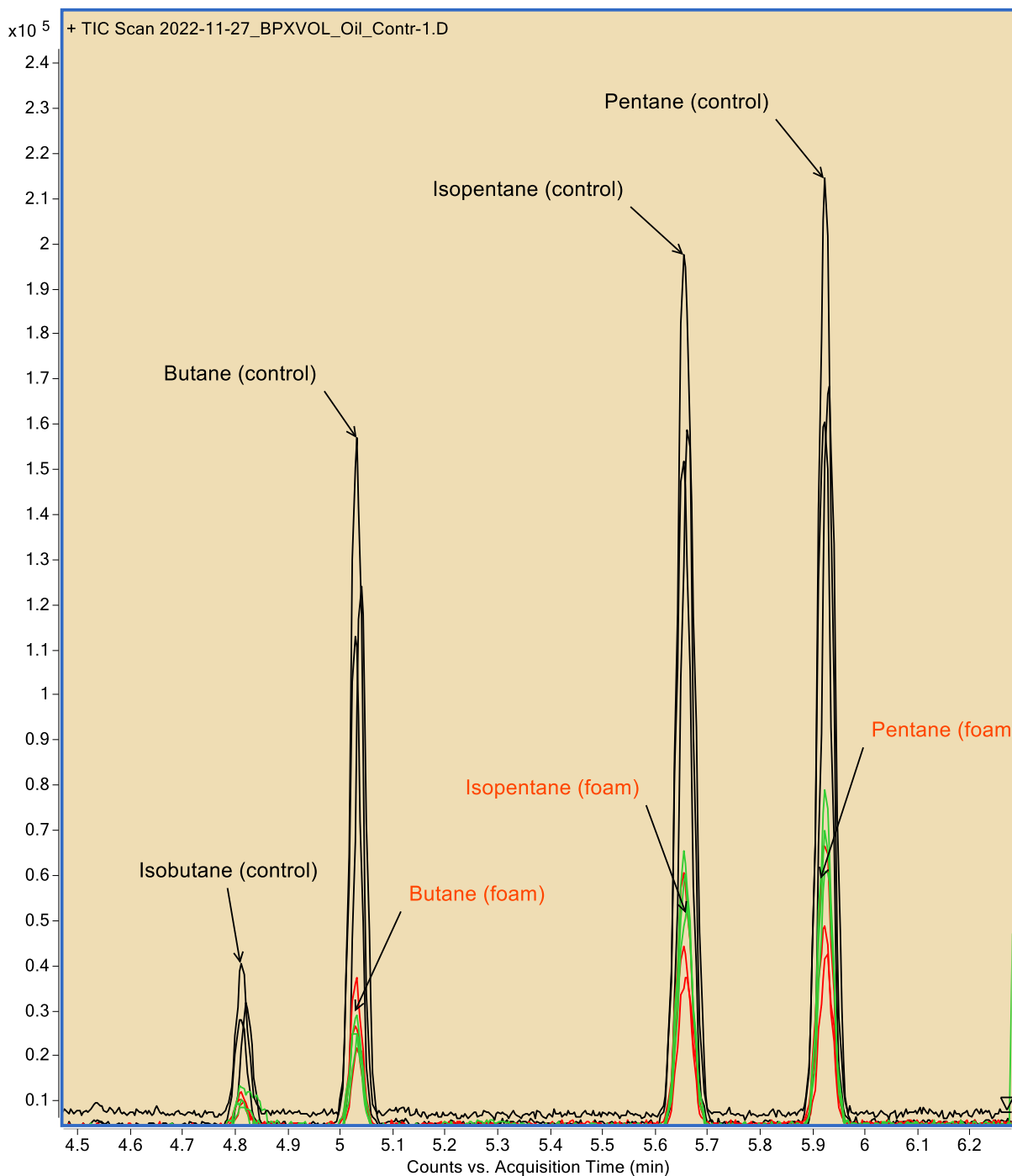
Identification of VOCs detected in the headspace.

The GC-MS (black) and GC-FID (blue) chromatograms of VOCs detected in the headspace



Overlay of GC-MS chromatograms of samples analyzed on 2022-11-27.

Chromatograms of control experiments are shown in black. Experiments with foam are shown in green and red. Headspace analysis was carried out in three replicates for each experiment.



List of detected compounds and relative (to the air) responses determined in the headspace of the control samples and after spraying the foam.

Retention Time (MS), min	Compound Name	Control Samples Area % report	Foam Samples Area % report
4.177	Air	100	100
4.810	Isobutane	0.68	0.25
5.029	Butane	2.92	0.56
5.650	Isopentane	4.83	1.70
5.920	Pentane	4.79	1.84
6.803	2-Methylpentane	2.33	1.34
7.050	3-Methylpentane	1.38	0.81
7.261	Hexane	2.26	1.36
7.956	Methylcyclopentane	0.64	0.37
8.535	2-Methylhexane	0.70	0.46
8.621	3-Methylhexane	0.43	0.26
8.914	Cyclohexane	0.89	0.51
9.700	Methylcyclohexane	0.57	0.32

The GC-MS (red) and FID (green) chromatograms of VOCs detected in the headspace of oil sample analyzed on 2022-11-06. Note, that there were detected more highly volatile and flammable VOCs (ethane, propane and higher responses of isobutane and butane) in this oil sample than in the sample used on 2022-11-27.

